

VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. **(Amended)** A method of ~~linking~~ assembling nucleic acid components in a predetermined order to produce a nucleic acid multicomponent construct, comprising:

- (a) providing at least two nucleic acid components, each comprising at least one genetic element providing a functionality and at least one single stranded 5' or 3' terminal sequence, wherein the terminal sequence hybridizes ~~having sufficient complementarity~~ to either a terminal sequence in another of said at least two nucleic acid components or to an oligonucleotide adaptor molecule that is supplied in addition to the at least two nucleic acid components so as to allow for specific annealing and linkage of all of the nucleic acid components in a predetermined order;
- (b) incubating the nucleic acid components under conditions which allow for specific annealing and assembling linkage of the components to thereby produce the nucleic acid multicomponent construct.

31. **(Amended)** A method of producing a vector, comprising:

- a) providing at least two nucleic acid components and optionally a linking nucleic acid molecule to be assembled into the construct, each component comprising a double stranded nucleic acid molecule encoding a functionality and having at least one single stranded 5' or 3' terminal sequence, wherein the terminal sequence hybridizes ~~having sufficient complementarity~~ to either a terminal sequence in a separate nucleic acid component or to a sequence in a linking nucleic acid molecule so as to allow for specific annealing and linkage of the components in a predetermined order, wherein the nucleic acid components encode:
  - i) an origin of replication
  - ii) a selectable marker
  - iii) an insert of interest;
- (b) incubating the nucleic acid components under conditions which allow for specific annealing and linkage of the nucleic acid components to thereby produce the functional vector.

39. **(Amended)** A kit for the production of nucleic acid multicomponent constructs, comprising a package containing nucleic acid components, each component comprising a double stranded nucleic acid molecule encoding a functionality and having at least one single stranded 5' or 3' terminal sequence, wherein the terminal sequence hybridizes ~~having sufficient complementarity~~

to either a terminal sequence in a separate nucleic acid component or to a sequence in a linking nucleic acid molecule so as to allow for specific annealing and linking of the components in a predetermined order.

40. **(Amended)** A kit for the production of nucleic acid multicomponent constructs, comprising at least 3 different nucleic acid components, each encoding a functionality, and including a 5' OH terminal phosphate group appropriately phosphorylated for ligation, the kit further comprising a ligase enzyme.

41. **(Amended)** A kit for the production of vectors, comprising nucleic acid components, each component comprising a double stranded nucleic acid molecule encoding a functionality and having at least one single stranded 5' or 3' terminal sequence, wherein the terminal sequence hybridizes having sufficient complementarity to either a terminal sequence in a separate nucleic acid component or to a sequence in a linking nucleic acid molecule so as to allow for specific annealing and assembling linkage of the components in a predetermined order, wherein the nucleic acid components encode: i) an origin of replication, and ii) a selectable marker.

42. **(Amended)** A method of assembling linking nucleic acid components in a predetermined order to produce a nucleic acid multicomponent construct, comprising:

- (a) providing the nucleic acid components and one or more linking nucleic acid molecules into the construct, each nucleic acid component comprising a double stranded nucleic acid molecule encoding a functionality having at least one single stranded 5' or 3' terminal sequence, wherein the terminal sequence hybridizes having sufficient complementarity to a sequence in a linking nucleic acid molecule so as to allow for specific annealing of complementary sequences and linkage of the components in a predetermined order;
- (b) incubating the nucleic acid components which allow for the specific annealing and assembling linkage of the nucleic acid components to thereby produce the nucleic acid multicomponent construct.

43. **(New)** A method for generating a nucleic acid construct by assembling nucleic acid components in a predetermined order, comprising:

- (a) providing at least three nucleic acid components, each independently comprising a nucleic acid sequence having a biological functionality or characteristic utility, and optionally, at least one oligonucleotide bridge, wherein each of said nucleic acid components are double stranded nucleic acid molecules having at least one

unique nonpalindromic single stranded 5' or 3' terminal sequence which facilitates specific hybridization of said nucleic acid components, and said oligonucleotide bridge(s) if provided, to assemble said nucleic acid components in a predetermined order; and

- (b) contacting said at least three nucleic acid components, and said oligonucleotide bridge(s) if provided, under conditions in which said 5' and 3' terminal sequences hybridize to generate a multicomponent nucleic acid construct.
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